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SEQUENCE LISTING

<110> Welcher, Andrew
Wen, Duanzhi
Kelly, Michael

<120> Interferon-Like Molecules and Uses Thereof

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Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser
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100															110	
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Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile Ile
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Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu Glu
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115 120 125

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Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg
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gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt 739
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Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu Arg Glu Asn Ile
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Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys
65 70 75 80

Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn
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Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg His Leu Lys
100 105 110

Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys
115 120 125

Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu Met Lys Glu
130 135 140

Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu Ser Ser Leu
145 150 155 160

Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu Lys Glu Lys
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Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu Ile Arg Arg
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His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu
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Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu
100 105 110

Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu
115 120 125

Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu
130 135 140

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Arg Lys

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Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg
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Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile

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Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser
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Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val
100 105 110

Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu
115 120 125

Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys
130 135 140

Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser
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Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val
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Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu
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 Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe
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 35 40 45

Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile
 50 55 60

Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu
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Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser

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Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser		
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Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser		
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Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val		
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Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu		
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50 55 60

Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu
65 70 75 80

Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu
85 90 95

Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser
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Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn
115 120 125

Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser
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 Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala
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gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat 339
 Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn
 95 100 105

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140 145 150

tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac 531
Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr
155 160 165 170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568
Lys Phe Thr Ala Leu Phe Arg Arg Lys
175

<210> 13
<211> 179
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Rat IFN-like
polypeptide cDNA insert and partial pAMG21 vector
sequence

<400> 13
Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
1 5 10 15

Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
20 25 30

Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
35 40 45

Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
50 55 60

Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
65 70 75 80

Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
85 90 95

Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asp Met Lys
100 105 110

Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
115 120 125

Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
130 135 140

Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
145 150 155 160

Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
165 170 175

Arg Arg Lys

<210> 14
<211> 568
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<220>
<221> CDS
<222> (22)..(558)

<400> 14
tctagaaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt 51
Met Cys Asn Leu Leu Asn Val His Leu Arg
1 5 10

cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca 99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser
15 20 25

ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa 147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln
30 35 40

gag ttc ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc 195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala
45 50 55

ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc 243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr
60 65 70

ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt 291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu
75 80 85 90

gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat 339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn
95 100 105

gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca 387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser
110 115 120

gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc 435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe
125 130 135

cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc 483
His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala

140

145

150

tgg gag att gtc cga gtg gaa atc cgt cgt tct ctg tac tac ttt tac 531
Trp Glu Ile Val Arg Val Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr
155 160 165 170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568
Lys Phe Thr Ala Leu Phe Arg Arg Lys
175

<210> 15
<211> 179
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human IFN-like
polypeptide cDNA insert and partial pAMG21 vector
sequence

<400> 15
Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
1 5 10 15

Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
20 25 30

Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
35 40 45

Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
50 55 60

Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
65 70 75 80

Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
85 90 95

Leu Asn Gln Cys Leu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys
100 105 110

Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
115 120 125

Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
130 135 140

Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
145 150 155 160

Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
165 170 175

Arg Arg Lys

<210> 16
<211> 556
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<220>
<221> CDS
<222> (1)..(546)

<400> 16
cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc 48
His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
1 5 10 15

tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta 96
Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
20 25 30

gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg 144
Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
35 40 45

caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa 192
Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
50 55 60

atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat 240
Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
65 70 75 80

tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa 288
Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
85 90 95

gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa 336
Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
100 105 110

gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg 384
Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
115 120 125

gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata 432
Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
130 135 140

gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att 480
Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
145 150 155 160

gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc 528
Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
165 170 175

gct ctg ttc cgt cgt aaa taatggatcc 556
Ala Leu Phe Arg Arg Lys
180

<210> 17
<211> 182
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human IFN-like
polypeptide cDNA insert and partial pAMG21 vector
sequence

<400> 17
His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
1 5 10 15

Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
20 25 30

Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
35 40 45

Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
50 55 60

Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
65 70 75 80

Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
85 90 95

Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
100 105 110

Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
115 120 125

Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
130 135 140

Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
145 150 155 160

Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
165 170 175

Ala Leu Phe Arg Arg Lys
180

<210> 18
<211> 11
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 18
Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
1 5 10

<210> 19
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Internalizing
domain derived from HIV tat protein

<400> 19
Gly Gly Gly Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
1 5 10 15

<210> 20
<211> 21
<212> DNA
<213> Rattus norvegicus

<400> 20
atgacactga agtattttatg g 21

<210> 21
<211> 21
<212> DNA
<213> Rattus norvegicus

<400> 21
attcatgttg agtagtttgt a 21

<210> 22
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1825-22

<400> 22
gaataaacata tgtgtgtata tctcgatcat actatcttgg agaatatg 48

<210> 23
<211> 63

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1825-21

<400> 23
ccgcggatcc attaattcat gttcagcagt ttgtaaaaaa tactgaaaca acgacgaatt 60
tcc 63

<210> 24
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1909-56

<400> 24
ccgcggatcc attaattcat gttcagcagt ttgtaaaaaa tactgaaaga acgacgaatt 60
tcc 63

<210> 25
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1967-32

<400> 25
ttgatctaga aaggaggaat aacatatgtg taacctgctg aacgttcacc tgcgtcgtgt 60
tacctgg 67

<210> 26
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1982-14

<400> 26
ccgcggatcc attatattacg acgaaacaga gcggtaaatt tgtaaaagta gtacaggcaa 60
cgacgatttc c 71

<210> 27
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1967-33

<400> 27
ccgcggatcc attatttacg acggaacaga gcggtaaatt tgtaaaaagta gtacagagaa 60
cgacggattt cc 72

<210> 28
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
2103-87

<400> 28
aaggagcata tgctggactg taacctgctg aacgttcac 39

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1200-54

<400> 29
gttattgctc agcggtggca 20

<210> 30
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1847-77

<400> 30
cccaagctta ccatgacact gaagtattta tg 32

<210> 31
<211> 33

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1847-78

<400> 31
aaggaaaaaa gcggccgcat tcatgtttag tag 33

<210> 32
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1896-56

<400> 32
acgcgtcgac tcatcaattc atgtttagta gtttg 35

<210> 33
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1896-57

<400> 33
aaggaaaaaa gcggccgctc atcaattcat gtttagtag 39

<210> 34
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-45

<400> 34
acgcgtcgac ttattatttc ctccctgaata g 31

<210> 35
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

1954-46

<400> 35
aaggaaaaaa gcggccgctt attatttcct cctgaataga gc

42

<210> 36
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1955-44

<400> 36
cccaagctta ccatgagcac caaacctgat atg

33

<210> 37
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-47

<400> 37
cccaagctta ccatgattca aaagtgtttg tggc

34

<210> 38
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-48

<400> 38
aaggaaaaaa gcggccgcgc ggccctcgat tttcctcctg aatagagctg taa

53

<210> 39
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-49

<400> 39
aaggaaaaaa gcggccgctt tcctcctgaa tagagctgta a

41